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ABSTRACT

The presumption that increased media utilization yields better results was tested at Los Angeles Pierce College (California). To study the effect of media on the learning and attitudes of students in the public speaking (Speech I) class, two matched groups of 41 subjects were treated identically, except that the experimental group used tape recorders to record their speeches for self-evaluation. At the end of the semester both groups were evaluated by three college speech teachers, and the experimental group of students completed questionnaires designed to reveal their attitudes toward their own speaking, their improvement in speech, the course, and the audio playback technique. Conclusions reached indicated that the audio playback of student speeches was of some value in improving student attitude toward the course, the students' specific vocal skills, and the students' ratings of themselves. Audio playback had no noticeable effect on students' attitudes toward either their own speaking or their improvement in speaking. (Author/RN)

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AN EXPERIMENTAL TEST OF THE EFFECT OF AUDIO PLAYBACK OF STUDENT SPEECHES UPON STUDENT ATTITUDE AND SPEECH IMPROVEMENT IN THE PUBLIC SPEAKING CLASSES AT PIERCE COLLEGE

RESEARCH REPORT 72-04

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CLEARINGHOUSE FOR
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Background. P. Kenneth Komoski of the Educational Products Information Exchange Institute testified before a House sub-committee that the largest group of unprotected consumers in the U.S. consists of millions of students who are deluged with poorly tested teaching machines and other complex gadgets. He estimated that 99% of the nation's teaching materials never have been systematically tried out to see how much they aid in the learning process (Time [June 7, 1971] p33).

In the field of speech the use of audio taping is commonly accepted as a means that can aid in the acquiring of speaking skills. One researcher noted that the tape recorder is "the most adaptable of the audio-visual media tools, because it is easily used and provides significant individualization of instruction" (Kenner, Speech Teacher, [Sept. 1967] p217). But, Dallinger in discussing the purposes and uses of recorders observed, "there seems to be a dearth of valid information about what a student really learns from recording his speech" (Ibid, p209).

The audio tape recorder has been used intermittently by various speech instructors at Pierce College with no direct, controlled testing of its instructional effect. The presumption that increased media utilization yields better results needed to be tested in the speech classes at Pierce.

Statement of the problem. It was the purpose of this study to discover the effect of media upon the learning and the attitudes of students in public speaking

class. In pursuing this purpose answers to the following research questions were sought:

1. What effect did the audio playback of the student's speech have upon the student's attitudes toward (a) his own speaking, (b) his improvement in public speaking, (c) various attributes of the course?
2. What effect did the audio playback of the student's speech have upon the student's vocal skills as rated by a panel of experts?
3. What effect did playback of student speeches have upon the ability of a student to rate his own public speaking in the area of voice?

Answering the above questions was accomplished by testing the following hypotheses:

1. There is no significant difference in student attitude toward his own public speaking between the group which heard the playback of their speeches (experimental group) and the group which did not hear the playback of their speeches (control group).
2. There is no significant difference in student attitude toward his improvement in public speaking between the experimental and control groups.
3. There is no significant difference in student attitude toward the course between the experimental and control groups.

4. There is no significant difference in specific vocal skills between the experimental and control groups.
5. There is no significant difference in the correlation of student self-rating and expert ratings in the area of voice between the experimental and control groups.
6. The frequency of the use of audio playback of student speeches had no correlation with ratings of student attitudes toward the course, his speaking and his improvement, or his specific vocal skills as rated by expert judges.

Method. The experimental method was used in this study to provide appropriate controlled tests of the null hypotheses.

Sampling Procedure. Two matched groups of 41 subjects (s were selected by frequency matching according to the following criteria: (a) age, (b) sex, (c) year in college, and (d) previous public speaking experience. These characteristics are represented in TABLE I for each of the two groups. The s were selected from four Speech I classes taught at prime hours by the same instructor. Experimental s were selected from two of the classes and control s from the other two classes.

No use was made of SCAT or other IQ scores in matching the groups. Bryan and Wilke (Journal of Applied Psychology, [June, 1942], 371-81) showed there was no reliable relationshi between audience evaluation of a speech and the speaker's

performance on standard tests of intelligence and personality. Ball (Speech Monographs, XXV Nov., 1958 , 285-90), found very low correlation (.24 and .02) between speech skills and general reasoning ability.

TABLE I

CHARACTERISTICS OF EXPERIMENTAL AND CONTROL GROUPS

	Experimental Group	Control Group
Age		
mean	20.6 years	20.5
standard deviation	4.0	4.4
Sex		
Male	63.4%	58.5%
Female	36.6%	41.5%
Year in College		
First	46.3%	41.5%
Second	53.7%	58.5%
Public Speaking Experience		
1 year	4.9%	4.9%
2 or more	0	0

Data Collection Procedures. Each member of the experimental group was required to purchase an audio cassette tape at the beginning of the semester. At the time of each speech each experimental s brought his tape to class; his speech was recorded, and he was given the tape and told to listen to it in the learning center on his own time. Both groups were given an oral critique by the instructor and an instructor-produced written evaluation of the speech after each speech. All

procedures for the classes of the control group were identical to the experimental group with the exception that the experimental group had its speeches recorded. At the end of the semester both groups were video recorded in an ungraded speech assignment. The video recording was played before three expert evaluators (Speech instructors with more than 7 years college speech teaching experience) who recorded ratings for each s in six categories of analysis (see APPENDIX A). The evaluators were given specific definitions for each of the six categories. In a previous similar situation the reliability of the three evaluators was tested and found to be highly similar.

At the end of the semester students in the experimental and control groups were given a questionnaire with questions designed to discover student attitude toward 1) his own speaking, 2) his improvement in speech, and 3) the course. (see APPENDIX B). Appropriate measures were taken to assure anonymity of the respondants as well as identification for matching with raters' scores. Responses to the questionnaire were quantified and punched on computer cards.

A second part of the questionnaire, examining student use of audio playback of speeches and student attitude toward the audio playback technique, was administered tc the experimental group only (see APPENDIX C). These data were also quantified and placed on computer cards for analysis.

Data Analysis. A test of significance between the two means of independent samples was run on each item of the

questionnaire administered to both groups. This provided a test of hypotheses 1-4. Question 2 in the questionnaire was used to test the first hypothesis. The second hypothesis was tested by questions 3 and 4. Question 1 provided the test for hypothesis 3. The fourth hypothesis was tested by comparing the means of the judges'scores for the two groups (question 5).

A Pearson linear correlation was computed between the student self-rating in question 5 and the judges' ratings of the speakers for both experimental and control groups. The r coefficients were transformed to z scores and a t test was run to test the difference of the z scores for the two groups. These procedures provided a test of hypothesis 5.

A Pearson r was used to measure the correlation between the frequency of the use of the audio playback of speeches, as represented in question 7 of the questionnaire administered to the experimental group, and the ratings on the questionnaire in items 1-5.

Findings. A comparison of the means of the ratings for the two groups together with their respective t values are represented in TABLE II. At the .05 level of significance only one item (1d) showed a significant difference of the means. However, since item 1d is only one of five items designed to yield student attitude toward the course, one cannot completely reject the entire null hypothesis three with much confidence. Hypotheses one, two, and four are clearly not to be rejected on the basis of the t values represented

in TABLE II.

The correlation between student self-evaluation and rater evaluation of students is represented in TABLE III for both groups. The r coefficients were transformed to z scores, and t tests for significant difference between the ratings for the two groups were run for the largest difference in scores in the same trait for the same rater. When the test did not yield a t value of significance at the .05 level it was not necessary to test for the other differences. As a result null hypothesis five was not rejected. The means by rater combined with traits (TABLE IV), however, indicated a consistently favorable rating for the experimental group.

The correlation of the frequency of the use of audio playback of speeches within the experimental group and their ratings on items of the questionnaire is represented in TABLE V. The frequency of the use of audio playback was derived from question 7 and is represented in TABLE VI. The correlations were not high enough to warrant a rejection of null hypothesis six.

Discussion and Conclusions. It would seem that since none of the null hypotheses could be rejected by the tests applied in this study, the use of audio playback of student speeches was of no significant value. But several observations are important at this point.

First, as several authorities have observed, it is frequently the specific use of a medium or the orientation to it rather than the medium itself which makes the difference.

In this study, inadequate orientation to the medium could account for a minimized effect.

Second, in the correlation of the frequency of use of audio playback with ratings on the questionnaire in item 6 (see TABLE V), the moderately high correlations (.46, .48, and .59) showed that students who used the playback of speeches more regarded it more highly.

Third, in comparing the expert raters' scores for the two groups as represented in TABLE IV, it was noted that in 21 of the 24 comparisons the experimental group received a more favorable rating than the control group. On the basis of chance the probability of this occurring is less than .01. Thus, it can be said that the experimental group did predictably better than the control group when rated by expert judges, but not at the level of significance as measured by the t test.

A similar conclusion can be drawn from observing the difference between the correlation of student self-evaluation and rater evaluation as represented in TABLE III. In 23 of 24 comparisons the correlation was higher in the experimental than the control group. The probability of this occurrance on the basis of chance alone is less than .005. It can be concluded that the experimental group self-evaluation was predictably more like the expert raters' than was the control group. No t tests were run to test for the difference between these correlations, but observation of the greatest difference in correlation indicated that there would be no significant difference at the .05 level.

The above observations revealed that the t test at the .05 level of significance was too strong an instrument to yield the differences between the experimental and control groups in most cases. There was, however, substantial consistency of lesser differences observed. It is this researcher's recommendation that the study be replicated using different tests for significance. The tests in this study prevented a type I error (rejecting an hypothesis which should not be rejected) very effectively but did not, in this researcher's opinion, adequately guard against a type II error (failing to reject an hypothesis which should be rejected).

The researcher concluded the following:

1. The audio playback of students' speeches had a significant favorable effect upon the students' image of the course as a constructive rather than destructive force.
2. The audio playback of students' speeches had a consistent but small favorable effect upon the correlation between student self-evaluation and expert rater evaluation.
3. The audio playback of students' speeches had a consistent but small favorable effect upon student achievement in specific vocal skills as measured by expert rater evaluation.
4. None of the null hypotheses was rejected.
5. New tests of significance need to be applied to variables in this study.

6. Those who used the audio playback more tended to regard its use more highly.

In summary, the audio playback of student speeches was shown to be of some value in improving student attitude toward the course, in improving the students' specific vocal skills and improving the students' ratings of themselves. Audio playback had no noticeable effect upon student attitude toward his own speaking or student attitude toward his improvement in speaking.

TABLE II

COMPARISON OF QUESTIONNAIRE RATINGS FOR THE EXPERIMENTAL AND CONTROL GROUPS

x = experimental group y = control group

Question	Group	Mean	St. Dev.	t value
1a	x	3.73	.78	1.02
	y	3.54	.95	
1b	x	2.51	.87	1.32
	y	2.24	.97	
1c	x	2.17	.97	1.48
	y	1.85	.96	
1d	x	2.12	.78	2.19 signific
	y	1.76	.73	
1e	x	2.88	.84	1.71
	y	2.51	1.08	
2	x	2.63	.99	0.47
	y	2.54	.87	
3a	x	2.93	.76	0.86
	y	2.78	.79	
3b	x	3.02	.76	0.14
	y	3.00	.84	
3c	x	3.00	.76	0.00
	y	3.00	.63	
3d	x	2.63	1.07	0.85
	y	2.46	.71	
3e	x	2.68	.93	-1.20
	y	2.90	.70	
3f	x	2.90	.92	-0.12
	y	2.93	.99	

TABLE II (continued)

		Mean	St. Dev.	t value
3g	x	3.20	1.03	1.22
	y	2.93	.96	
4	x	3.02	.82	0.00
	y	3.02	.76	
5a	x	2.73	.87	-0.82
	y	2.88	.75	
5b	x	2.66	.97	0.24
	y	2.71	.84	
5c	x	2.90	.86	0.69
	y	2.78	.73	
5d	x	2.88	.75	0.80
	y	2.76	.62	
5e	x	2.88	.75	-0.86
	y	3.02	.79	
5f	x	2.93	.76	0.48
	y	2.85	.62	

TABLE III

CORRELATION BETWEEN STUDENT SELF-EVALUATION

AND RATER'S EVALUATION OF STUDENT

EXPERIMENTAL

TRAIT / EXPERT RATER	Rate	Pitch	Artic	Fluency	Phrasing	Total Effect
α	.09	.04	.22	-.37	.10	.19
β	.06	.31	.09	.13	.09	.14
γ	.05	.20	.36	-.03	.12	.32

CONTROL

α	.02	-.34	-.12	-.10	-.09	.08
β	.03	-.06	-.20	-.13	.03	-.04
γ	.00	.00	.04	-.12	-.03	.17

TABLE IV

Raters by groups	Traits	PITCH	RATE	ARTICU-LATION	FLUENCY	PHRASING	EFFECT-IVENESS
	X	2.71	2.83	2.81	2.73	2.66	2.88
	Y	3.22	3.27	3.20	3.10	3.22	3.12
	X	3.22	3.00	3.17	3.00	2.73	3.24
	Y	3.17	3.29	3.00	3.10	2.95	3.12
	X	2.85	2.88	2.95	2.73	2.63	3.02
	Y	3.27	3.22	2.98	3.34	3.05	3.15

X = experimental group

Y = control group

note: smaller scores are more favorable

MEANS OF RATINGS BY RATER COMBINED WITH TRAIT

TABLE V

CORRELATION OF THE FREQUENCY OF USE OF AUDIO PLAYBACK WITH RATINGS ON THE QUESTIONNAIRE

1. This semester's course in public speaking was:	
a. easy - difficult	-.15
b. interesting - dull	-.02
c. relevant - irrelevant	.11
d. constructive - destructive	.01
e. inspiring - discouraging	.05
2. During the semester, I feel my public speaking has improved:	
greatly - not at all	.15
3. I would characterize my speech as being:	
a. expressive - dull	.14
b. dynamic - lethargic	.29
c. precise - imprecise	.12
d. organized - disorganized	.11
e. articulate - inarticulate	-.22
f. fluent - halting	-.12
g. confident - lacking confidence	-.06
4. In general I am a	
very good speaker - very poor speaker	.20
5. Rate the following factors in your own speaking:	
a. Rate	.14
b. Pitch	.29
c. Artic	.17
d. Fluency	-.09
e. Phrasing	-.14
f. Effectiveness	.29

TABLE V (continued)

6. The tape recording of speeches was:	
a. useful - useless	.46
b. convenient - inconvenient	.48
c. worthwhile - worthless	.59

TABLE VI

FREQUENCY OF USE OF AUDIO PLAYBACK

OF SPEECHES

(experimental group only)

Times Used	Number of subjects
0	4
1	5
2	7
3	12
4	6
5	4
6	3
	total n = 41

Mean of times used = 2.85

APPENDIX A

EXPERT RATERS' FORM FOR RATING STUDENT SPEECHES

Student number _____

1. Pitch
   excellent ——— poor
2. Rate
   excellent ——— poor
3. Articulation & Pronunciation
   excellent ——— poor
4. Fluency
   excellent ——— poor
5. Phrasing & Word Choice
   excellent ——— poor
6. Over-all Effectiveness
   excellent ——— poor

APPENDIX B

QUESTIONNAIRE FOR ALL SUBJECTS

I.D. _____

1. This semester's course in public speaking was:

a. easy — difficult

b. interesting — dull

c. relevant — irrelevant

d. constructive — destructive

e. inspiring — discouraging

2. During the semester, I feel that my public speaking has improved:

greatly — not at all

3. I would characterize my public speaking as being:

a. expressive — dull

b. dynamic — lethargic

c. precise — imprecise

d. organized — disorganized

e. articulate — inarticulate

f. fluent — halting

g. confident — lacking confidence

4. In general I am a

very good speaker — very poor speaker

5. Rate the following factors in your own speaking.

a. Rate (appropriateness)

excellent — poor

APPENDIX B (con't)

b. Pitch (variety & control)

excellent — poor

c. Articulation & Pronunciation

excellent — poor

d. Fluency

excellent — poor

e. Phrasing & Word Choice

excellent — poor

f. Over-all Effectiveness

excellent — poor

APPENDIX C

QUESTIONNAIRE FOR EXPERIMENTAL SUBJECTS ONLY

6. The tape recording of speeches was:

a. useful ____ ____ ____ ____ ____ useless

b. convenient ____ ____ ____ ____ ____ inconvenient

c. worthwhile ____ ____ ____ ____ ____ worthless

7. During the semester I listened to the playback of

0 ____ 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____ tapes

of my speeches.

8. The use of recordings of student speeches in speech classes should be continued ____ discontinued ____ no opinion ____ .

9. The use of recordings of student speeches in speech classes should be optional ____ required ____ no opinion ____ .